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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,056	06/22/2005	Kazufumi Sato	SHIGA7.021APC	1274

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EXAMINER

CHU, JOHN S Y

ART UNIT	PAPER NUMBER
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1795

NOTIFICATION DATE	DELIVERY MODE
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10/12/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcarter@kmob.com
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Office Action Summary

Application No.

10/540,056

Applicant(s)

SATO ET AL.

Examiner

John S. Chu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Office action is in response to the application filed June 22, 2005 and is a new action considering claims 12-20 previously not considered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over UETANI et al (6,627,381 B1) in view of YAMAMOTO et al (7,005,230) and NAKANISHI et al (2002/0164540)

The claimed invention is drawn to the following:

1. A positive resist composition comprising:
 - a resin component (A) containing an acid dissociable dissolution inhibiting
 - 5 group whose alkali solubility increases under action of acid; and
 - an acid generator component (B) that generates acid on exposure, wherein
 - the resin component (A) is a copolymer comprising a first structural unit (a1)
 - derived from a hydroxystyrene and a second structural unit (a2) derived from a
 - (meth)acrylate ester containing an alcoholic hydroxyl group, in which 10 mol% or more
 -) and 25 mol% or less of a combined total of hydroxyl groups within the structural units
 - (a1) and alcoholic hydroxyl groups within the structural units (a2) are protected with the
 - acid dissociable dissolution inhibiting groups, and
 - a weight average molecular weight of the copolymer prior to protection with the
 - acid dissociable dissolution inhibiting groups is 2,000 or more and 8,500 or less.

UETANI et al discloses a positive resist composition wherein the resin component is disclosed in Synthesis Example 2, in column 10, lines 23-39, to be a copolymer of 1-ethoxyethylated hydroxystyrene/3-hydroxy-1-adamantyl methacrylate. Here the resin is disclose to have a content of 15% of the 1-ethoxyethylate groups to the benzene rings, which implies 15% of the hydroxyl groups on the benzene rings are substituted, thus meeting the claimed limitations of the recited copolymer. The reference further disclose the acid generating agent, and amine compound as seen in the Abstract.

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The reference to UETANI et al lacks the claimed third monomer unit in a working example, however clearly teaches the use of the third monomer unit in column 5, lines 45-47.

The suitable monomers include styrene, acrylonitrile, methyl methacrylate and methyl acrylate.

The reference further lacks the disclosure for the claimed weight average molecular weight of 2,000 or more and 8,500 or less. Finally the reference lacks the recited polydispersity as recited in claim 7 of 2.0 or less. The Synthesis example 1 discloses the resin to have a polydispersity of 2.19.

YAMAMOTO et al is cited to disclose a positive resist composition wherein column 25, lines 52-63 disclose typical weight average molecular weights for resins suitable for use in the resist compositions having an acid labile side group. These molecular weight ranges are 5,000 – 20,000 . The reference further discloses in lines 60-62 a preferred polydispersity of 1-3 for the resin when used in a photoresist composition.

NAKANISHI et al (2002/0164540) discloses a resin comprising a hydroxystyrene/ethyl-adamantyl methacrylate wherein the resin has a Mw of 8200 see Synthesis Example (2b) page 5 paragraph [0093]. The reference lacks a methacrylate ester having the claimed alcoholic hydroxyl group.

It would have been *prima facie* obvious to one of ordinary skill in the art of positive photoresist compositions to use copolymer having a weight average molecular weight between 5,000 – 20,000 in view of YAMAMOTO et al and NAKANISHI et al and having a polydispersity of 1-3 and reasonably expect same or similar results as recited in UETANI et al for a photoresist composition which is excellent in sensitivity, resolution and dry etch resistance.

No claims are allowed.

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4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

UETANI et al (6,846,609) disclose a resin of hydroxystyrene/hydroxy-adamantyl methacrylate and dihydroxy-adamantyl methacrylate in a photoresist wherein the Mw is 11,400.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John S. Chu/
Primary Examiner, Group 1700

J.Chu
October 2, 2007